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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,367	10/07/2003	Kenichi Yokoyama	5988-056-27	4296
23552 7590 02/23/2007 MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			EXAMINER LEE, SIN J	
			ART UNIT	PAPER NUMBER
			1752	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/23/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/679,367	YOKOYAMA ET AL.	
	Examiner	Art Unit	
	Sin J. Lee	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-16, 18 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-11 is/are allowed.
- 6) ☒ Claim(s) 2, 3, 5, 12-14, 16, 18 and 19 is/are rejected.
- 7) ☒ Claim(s) 4, 6 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

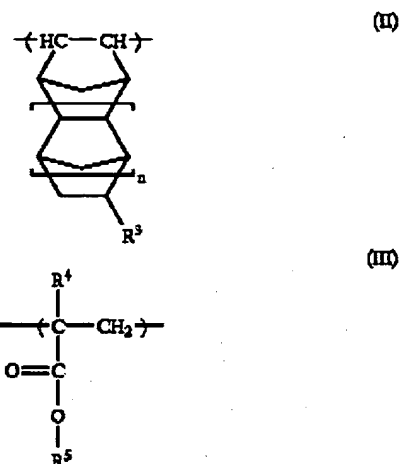
DETAILED ACTION

1. In view of the amendment of November 13, 2006, previous 102(b) rejection on claim 13 over Nakano et al (JP'923), previous 102(b) rejection on claims 7-9 over Watabe et al (JP'520), previous 103(a) rejection on claims 3-5, 7-9, 14-16 and 18 over Yasunami et al'287, previous 103(a) rejection on claims 16 and 6 over Iwasawa et al'769 in view of Yasunami et al'287 and previous 103(a) rejection on claims 19 and 2 over Adegawa et al'916 are hereby withdrawn.
2. Due to new grounds of rejections, the following rejections are made non-final with the Examiner's sincere apology.

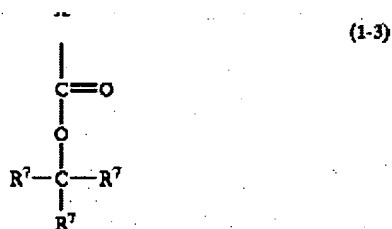
Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 3, 5, 14, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al (US 2003/0219680 A1).

Nishimura teaches a photoresist composition containing (A) an alkali-insoluble resin which becomes alkali soluble by the action of an acid and (B) a photoacid generator (see [0016]-[0019]). Nishimura teaches that his resin (A) can contain a recurring unit of formula (II) or (III) as shown in [0086];



As one of four kinds of examples of for R^3 , Nishimura teaches (see [0088]) the following formula



, and as one of preferred examples for $-C(R^7)_3$, Nishimura teaches t-butyl group (see [0103]-[0104]). Based on Nishimura's teaching, it would have been obvious to one skilled in the art to include the repeating unit of formula (II), in which R^3 is t-butoxycarbonyl group, into Nishimura's resin (A) with a reasonable expectation of obtaining a resist composition having high transmittance of radiations and exhibiting high sensitivity, resolution, pattern shape, dry etching resistance and line width stability. Nishimura also teaches the use of an onium salt (see [0954]).

Nishimura teaches the use of a nitrogen-containing organic compound such as nitrogen-containing heterocyclic compound as an acid diffusion controller (see [1009],

Art Unit: 1752

[1010], [1014] and [1020]). As one of examples for such compound, Nishimura teaches 1-benzyl-2-methylimidazole (which teaches present compound of formula (1) of claims 16 and 18 – present R^1 and R^3 being H atoms, R^2 being a phenyl group and present R^4 being a methyl group). Based on Nishimura's teaching, it would have been obvious to one skilled in the art to use 1-benzyl-2-methylimidazole as Nishimura's acid diffusion controller with a reasonable expectation of improving storage stability and resolution of the resulting resist composition. Therefore, Nishimura's teaching renders obvious present inventions of claims 16, 5, 18, 3 and 14.

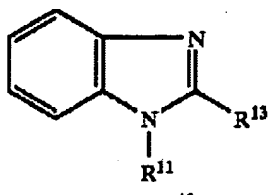
5. Claims 19 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al (US 2003/0219680 A1) in view of Kodama et al (5,891,603).

Although Nishimura teaches the use of an alkali-insoluble resin which becomes alkali soluble by the action of an acid and a photoacid generator, such two-component system is well known in the art to be equivalent to three-component system, which contains an alkali-soluble resin, a photoacid generator and a dissolution inhibitor, as evidenced by Kodama, col.2, lines 48-64. Because of this art-recognized equivalency, it would have been obvious to one skilled in the art to use an alkali-soluble resin having (meth)acrylic acid repeating unit together with a dissolution inhibitor in Nishimura's resist composition. Therefore, Nishimura in view of Kodama would render obvious present inventions of claims 19 and 2.

6. Claims 3, 5, 12-14, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamabuchi et al (US 2003/0148211 A1).

Kamabuchi teaches a resist composition containing Resin A1, a photoacid generator (sulfonium salt) and a quencher (see [0106] and [0119]-[0123]).

As one of examples for the quencher, Kamabuchi teaches (see [0073]-[0075]) the following compound



in which R^{11} can be an alkyl group of 1-6 carbon atoms and R^{13} can be an alkyl group of 1-6 carbon atoms. Based on Kamabuchi's teaching, it would have been obvious to one skilled in the art to use the compound shown above in which R^{11} and R^{13} are alkyl group of 6 carbon atoms as a quencher in Kamabuchi's composition with a reasonable expectation of diminishing performance deterioration caused by inactivation of acid which occurs due to post exposure delay. Such compound teaches present compound of formula (1) of claims 12, 13, 16 and 18 (present R^1 and R^3 being H atoms, R^2 being pentyl group, R^4 being hexyl group and present R^5 and R^6 being alkenyl groups which are bonded together to form a ring). Therefore, Kamabuchi's teaching renders obvious present inventions of claims 12, 13, 16, 5, 18, 3 and 14.

7. Claims 19 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamabuchi et al (US 2003/0148211 A1) in view of Kodama et al (5,891,603).

Although Kamabuchi teaches the use of an alkali-insoluble resin which becomes alkali soluble by the action of an acid and a photoacid generator, such two-component system is well known in the art to be equivalent to three-component system, which

Art Unit: 1752

contains an alkali-soluble resin, a photoacid generator and a dissolution inhibitor, as evidenced by Kodama, col.2, lines 48-64. Because of this art-recognized equivalency, it would have been obvious to one skilled in the art to use an alkali-soluble resin having (meth)acrylic acid repeating unit together with a dissolution inhibitor in Kamabuchi's resist composition. Therefore, Kamabuchi in view of Kodama would render obvious present inventions of claims 19 and 2.

Allowable Subject Matter

8. Claims 4, 6 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the cited prior arts teaches or suggests present resin of claim 4 having a recurring unit of formula (10) or present resin of claim 6.

9. Claims 7-11 are allowed. None of the cited prior arts teaches or suggests present negative type composition of claim 7 or present component (A) of claim 10.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Art Unit: 1752

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Lee

S. Lee
February 16, 2007

Sin Lee

SIN LEE
PRIMARY EXAMINER